Name_____ Date_____ Block_____

FACTORING PRACTICE

KEY

- **Trinomials (3 terms) with a=1 (x^2+bx+c)**
  - What 2 numbers multiply to make c and add to make b?

1) b^2+8b+7 $(b+1)(b+7)$	2) $x^2+16x+64$ $(x+8)(x+8)$	3) n^2+6n+8 $(n+4)(n+2)$
4) $n^2+4n-12$ $(n+6)(n-2)$	5) $x^2-11x+10$ $(x-10)(x-1)$	6) $a^2+11a+18$ $(a+9)(a+2)$
7) $x^2-4x+24$ prime	8) p^2+p-90 $(p-9)(p+10)$	9) b^2-6b+8 $(b-4)(b-2)$
10) n^2-5n+6 $(n-2)(n-3)$	11) $6v^2+66v+60$ $6(v^2+11v+10)$ $6(v+10)(v+1)$	12) $2k^2+22k+60$ $2(k^2+11k+30)$ $2(k+5)(k+6)$

pull out GCF first, then factor what's left inside the parentheses

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- **Difference of squares (2 terms) (a^2-b^2)**
  - Always factors to (a+b)(a-b)

KEY

1) p^2-36 $(p+6)(p-6)$	**2)** x^2-1 $(x+1)(x-1)$	**3)** $144-y^2$ $(12-y)(12+y)$
4) $9x^2-1$ $(3x+1)(3x-1)$	**5)** $16x^2-9$ $(4x+3)(4x-3)$	**6)** n^2-121 $(n+11)(n-11)$
7) $4c^2-121$ $(2c+11)(2c-11)$	**8)** $9a^2-100$ $(3a+10)(3a-10)$	**9)** $36k^2-1$ $(6k+1)(6k-1)$
10) $4n^2-49$ $(2n+7)(2n-7)$	**11)** $3n^2-75$ $3(n^2-25)$ $3(n+5)(n-5)$	**12)** $2k^2-8$ $2(k^2-4)$ $2(k+2)(k-2)$

Factor out GCF first, then factor what's left inside

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KEY

- **Factoring by grouping (4 terms)**
  - Cut problem in half (2 terms in each half)
  - Factor each half using GCF
  - Make sure that what's in parentheses matches
  - Group the factors together

1) $4v^3-12v^2-5v+15$

$(4v^2-5)(v-3)$

2) $8r^3-64r^2+r-8$

$8r^2(r-8)+1(r-8)$

$(8r^2+1)(r-8)$

3) $12p^3-21p^2+28p-49$

$3p^2(4p-7)+7(4p-7)$

$(3p^2+7)(4p-7)$

4) $x^2a+x^2b-16a-16b$

$x^2(a+b)-16(a+b)$

$(x^2-16)(a+b)$

5) $12x^3+2x^2-30x-5$

$2x^2(6x+1)-5(6x+1)$

$(2x^2-5)(6x+1)$

6) $y^3+3y^2-9y-27$

$y^2(y+3)-9(y+3)$

$(y^2-9)(y+3)$

7) t^3-t^2+t-1

$t^2(t-1)+1(t-1)$

$(t^2+1)(t-1)$

8) $ay^2+4y^2-9a-36$

$y^2(a+4)-9(a+4)$

$(y^2-9)(a+4)$

9) $16mn-4m^2+28n-7m$

$4m(4n-m)+7(4n-m)$

$(4m+7)(4n-m)$

10) $4x^3+12x^2-9x-27$

$4x^2(x+3)-9(x+3)$

$(4x^2-9)(x+3)$

11) $6x^2-24x+2xy-8y$

$2(3x^2-12x+xy-4y)$

$2(3x(x-4)+y(x-4))$

$=2(3x+y)(x-4)$

12) $105n^3+175n^2-75n-125$

$5(21n^3+35n^2-15n-25)$

$5[7n^2(3n+5)-5(3n+5)]$

$=5(7n^2-5)(3n+5)$

Pull out GCF first, then factor what's left inside

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- **Mixed Practice!**

1) $n^2-10n+9$ $(n-9)(n-1)$	**2)** g^2-196 $(g-14)(g+14)$	**3)** x^2-x-56 $(x-8)(x+7)$
4) $2x^2-8-x^3+4x$ $2(x^2-4)-x(x^2-4)$ $\boxed{(2-x)(x^2-4)}$	**5)** t^2+100 prime	**6)** $m^2+2m-24$ $(m+6)(m-4)$
7) $25v^3+5v^2+30v+6$ $5v^2(5v+1)+6(5v+1)$ $\boxed{(5v^2+6)(5v+1)}$	**8)** x^2+5x+3 prime	**9)** $6v^3-16v^2+21v-56$ $2v^2(3v-8)+7(3v-8)$ $\boxed{(2v^2+7)(3v-8)}$
10) $p^2-15p+50$ $(p-10)(p-5)$	**11)** $36a^4-25b^4$ $(6a^2+5b^2)(6a^2-5b^2)$	**12)** $2r^2+2r-4$ $2(r^2+r-2)$ $\boxed{2(r+2)(r-1)}$